

## WEST Search History

DATE: Friday, January 19, 2007

<b>Hide?</b>	<b>Set Name</b>	<b>Query</b>	<b>Hit Count</b>
		<i>DB=USPT; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L6	L5 and antisense	167
<input type="checkbox"/>	L5	insulin receptor substrate	302
		<i>DB=PGPB; PLUR=YES; OP=ADJ</i>	
<input type="checkbox"/>	L4	L3 and antisense	90
<input type="checkbox"/>	L3	insulin receptor substrate-1	181
<input type="checkbox"/>	L2	L1 and antisense	258
<input type="checkbox"/>	L1	insulin receptor substrate	494

END OF SEARCH HISTORY



# Symbol Report: IRS1


[Gene Search](#)
[Guidelines](#)
[Gene Submission](#)
[Downloads](#)

*Giving unique and meaningful names to every human gene*

[Quick Gene Search](#)

Core Data		Database Links		
Approved Symbol <u>+</u>	IRS1	Pubmed IDs <u>+</u>		
Approved Name <u>+</u>	insulin receptor substrate 1	1648180	<u>PMID</u>	
HGNC ID <u>+</u>	HGNC:6125	OMIM ID (mapped data) <u>+</u>		
Status <u>+</u>	Approved	147545	<u>OMIM</u>	
Chromosome <u>+</u>	2q36	Entrez Gene ID (mapped data) <u>+</u>		
Previous Symbols <u>+</u>		3667	<u>Gene</u>	<u>Map Vi</u>
Previous Names <u>+</u>		RefSeq (mapped data) <u>+</u>		
Aliases <u>+</u>	HIRS-1	NM_005544	<u>GenBank</u>	<u>UCSC</u> <u>Browse</u>
Name Aliases <u>+</u>		UniProt ID (mapped data) <u>+</u>		
		P35568	<u>SwissProt</u>	<u>UniPro</u>
Gene Symbol Links		Specialist Database Links <u>+</u>		
<u>Ensembl</u> <u>GeneView</u> <u>GENATLAS</u> <u>GeneCards</u> <u>HCOP</u> <u>GeneClinics/GeneTests</u> <u>Vega</u> <u>Treefam</u>				

See [Column definitions](#) for descriptions of the various data fields. Also see our [custom downloads](#) page for bulk access to our data


**MRC**

 Medical  
Research  
Council

**wellcome**trust


The work of the HGNC is supported by NHGRI grant P41 HG003345, the UK Medical Research Council and the Wellcome Trust.


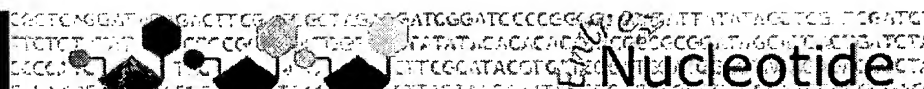


---

Contact us: [nome@galton.ucl.ac.uk](mailto:nome@galton.ucl.ac.uk)

[Back to top](#)

This page last updated: April 25, 2005

[PubMed](#)
[Nucleotide](#)
[Protein](#)
[Genome](#)
[Structure](#)
[PMC](#)
[Taxonomy](#)
[OMIM](#)
[Books](#)

Search  for

Display  Show   Hide: ☐ Sequence ☐ Lesser features

Range: from  to  ☐ Reverse complemented strand Features: ☐ SNP ☒ STS

☐ 1: [NM\\_005544](#). Reports [Homo sapiens insu...\[gi:5031804\]](#)

[Links](#)

[Comment](#) [Features](#) [Sequence](#)

LOCUS NM\_005544 5828 bp mRNA linear PRI 24-DEC-2006  
 DEFINITION Homo sapiens insulin receptor substrate 1 (IRS1), mRNA.  
 ACCESSION NM\_005544  
 VERSION NM\_005544.1 GI:5031804  
 KEYWORDS .  
 SOURCE Homo sapiens (human)  
 ORGANISM Homo sapiens  
 Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
 Mammalia; Eutheria; Euarchontoglires; Primates; Haplorrhini;  
 Catarrhini; Hominidae; Homo.

REFERENCE 1 (bases 1 to 5828)  
 AUTHORS Bayazit,Y.A., Erdal,M.E., Yilmaz,M., Ciftci,T.U., Soylemez,F.,  
 Gokdogan,T., Kokturk,O., Kemaloglu,Y.K. and Koybasioglu,A.  
 TITLE Insulin receptor substrate gene polymorphism is associated with  
 obstructive sleep apnea syndrome in men  
 JOURNAL Laryngoscope 116 (11), 1962-1965 (2006)  
 PUBMED [17075427](#)  
 REMARK GeneRIF: Polymorphism of the insulin receptor substate-1 gene at  
 codon 972, especially Gly/Arg variant, appears to be associated  
 with occurrence of obstructive sleep apnea syndromes in male  
 patients, whereas this polymorphism is not related to severity of  
 OSAS

REFERENCE 2 (bases 1 to 5828)  
 AUTHORS Greene,M.W., Ruhoff,M.S., Roth,R.A., Kim,J.A., Quon,M.J. and  
 Krause,J.A.  
 TITLE PKCdelta-mediated IRS-1 Ser24 phosphorylation negatively regulates  
 IRS-1 function  
 JOURNAL Biochem. Biophys. Res. Commun. 349 (3), 976-986 (2006)  
 PUBMED [16970908](#)  
 REMARK GeneRIF: Ser24 is a negative regulatory phosphorylation site in  
 IRS-1.

REFERENCE 3 (bases 1 to 5828)  
 AUTHORS Shah,O.J. and Hunter,T.  
 TITLE Turnover of the active fraction of IRS1 involves raptor-mTOR- and  
 S6K1-dependent serine phosphorylation in cell culture models of  
 tuberous sclerosis  
 JOURNAL Mol. Cell. Biol. 26 (17), 6425-6434 (2006)  
 PUBMED [16914728](#)  
 REMARK GeneRIF: These studies suggest that, through serine  
 phosphorylation, Raptor-mTOR and S6K1 promote the depletion of IRS1  
 from specific intracellular pools in pathological states of insulin  
 and IGF-I resistance and in lesions associated with tuberous  
 sclerosis.

REFERENCE 4 (bases 1 to 5828)  
AUTHORS Danielsson,A., Nystrom,F.H. and Stralfors,P.  
TITLE Phosphorylation of IRS1 at serine 307 and serine 312 in response to insulin in human adipocytes  
JOURNAL Biochem. Biophys. Res. Commun. 342 (4), 1183-1187 (2006)  
PUBMED [16516141](#)  
REMARK GeneRIF: Negative feedback phosphorylation of serine 312 required relatively high concentrations of insulin (EC(50)=3 nM) for a long time (t(1/2) ca. 30 min) and reduced the steady-state tyrosine phosphorylation, without affecting the concentration, of IRS1.

REFERENCE 5 (bases 1 to 5828)  
AUTHORS Weigert,C., Hennige,A.M., Lehmann,R., Brodbeck,K., Baumgartner,F., Schauble,M., Haring,H.U. and Schleicher,E.D.  
TITLE Direct cross-talk of interleukin-6 and insulin signal transduction via insulin receptor substrate-1 in skeletal muscle cells  
JOURNAL J. Biol. Chem. 281 (11), 7060-7067 (2006)  
PUBMED [16418171](#)  
REMARK GeneRIF: interleukin-6 has a role in insulin signal transduction via insulin receptor substrate-1 in skeletal muscle cells

REFERENCE 6 (bases 1 to 5828)  
AUTHORS Wolf,G., Trub,T., Ottinger,E., Groninga,L., Lynch,A., White,M.F., Miyazaki,M., Lee,J. and Shoelson,S.E.  
TITLE PTB domains of IRS-1 and Shc have distinct but overlapping binding specificities  
JOURNAL J. Biol. Chem. 270 (46), 27407-27410 (1995)  
PUBMED [7499194](#)

REFERENCE 7 (bases 1 to 5828)  
AUTHORS Wang,L., Hayashi,H., Mitani,Y., Ishii,K., Ohnishi,T., Niwa,Y., Kido,H. and Ebina,Y.  
TITLE Cloning of a cDNA encoding a 190-kDa insulin receptor substrate-1-like protein of simian COS cells  
JOURNAL Biochem. Biophys. Res. Commun. 216 (1), 321-328 (1995)  
PUBMED [7488107](#)

REFERENCE 8 (bases 1 to 5828)  
AUTHORS Hadari,Y.R., Tzahar,E., Nadiv,O., Rothenberg,P., Roberts,C.T. Jr., LeRoith,D., Yarden,Y. and Zick,Y.  
TITLE Insulin and insulinomimetic agents induce activation of phosphatidylinositol 3'-kinase upon its association with pp185 (IRS-1) in intact rat livers  
JOURNAL J. Biol. Chem. 267 (25), 17483-17486 (1992)  
PUBMED [1381348](#)  
REMARK Erratum:[J Biol Chem 1993 Apr 25;268(12):9156]

REFERENCE 9 (bases 1 to 5828)  
AUTHORS Nishiyama,M. and Wands,J.R.  
TITLE Cloning and increased expression of an insulin receptor substrate-1-like gene in human hepatocellular carcinoma  
JOURNAL Biochem. Biophys. Res. Commun. 183 (1), 280-285 (1992)  
PUBMED [1311924](#)

REFERENCE 10 (bases 1 to 5828)  
AUTHORS Sun,X.J., Rothenberg,P., Kahn,C.R., Backer,J.M., Araki,E., Wilden,P.A., Cahill,D.A., Goldstein,B.J. and White,M.F.  
TITLE Structure of the insulin receptor substrate IRS-1 defines a unique signal transduction protein  
JOURNAL Nature 352 (6330), 73-77 (1991)  
PUBMED [1648180](#)

COMMENT PROVISIONAL REFSEQ: This record has not yet been subject to final NCBI review. The reference sequence was derived from [S62539.1](#).

Publication Note: This RefSeq record includes a subset of the publications that are available for this gene. Please see the

Entrez Gene record to access additional publications.

```

FEATURES
  source      Location/Qualifiers
              1..5828
              /organism="Homo sapiens"
              /mol_type="mRNA"
              /db_xref="taxon:9606"
              /chromosome="2"
              /map="2q36"
  gene        1..5828
              /gene="IRS1"
              /note="insulin receptor substrate 1; synonym: HIRS-1"
              /db_xref="GeneID:3667"
              /db_xref="HGNC:6125"
              /db_xref="HPRD:00943"
              /db_xref="MIM:147545"
  CDS         1021..4749
              /gene="IRS1"
              /go_component="cytoplasm; microsome; nucleus"
              /go_function="insulin receptor binding [pmid 7537849]
[pmid 7559478]; insulin-like growth factor receptor
binding [pmid 7541045]; phosphoinositide 3-kinase binding
[pmid 16043515]; protein binding [pmid 8388384] [pmid
11018022]; SH2 domain binding; signal transducer activity
[pmid 1311924] [pmid 8513971]; transmembrane receptor
protein tyrosine kinase docking protein activity [pmid
1648180]"
              /go_process="insulin receptor signaling pathway [pmid
7537849] [pmid 7559478]; insulin-like growth factor
receptor signaling pathway [pmid 7541045]; signal
transduction [pmid 1311924]"
              /codon_start=1
              /product="insulin receptor substrate 1"
              /protein_id="NP_005535.1"
              /db_xref="GI:5031805"
              /db_xref="CCDS:CCDS2463.1"
              /db_xref="GeneID:3667"
              /db_xref="HGNC:6125"
              /db_xref="HPRD:00943"
              /db_xref="MIM:147545"
              /translation="MASPPESDGFSDVRKVGYL RPKPSMKHRFFVLRAASEAGGPARL
EYYENEKKWRHKSSAPKRSIPLESCFNINKRADSKNKH LVALYTRDEHFAIAADSEAE
QDSWYQALLQLHNRAKGHHDGAAALGAGGGGSCSGSSGLGEAGEDLSYGDVPPGPAF
KEVWQVILKPKGLGQTKNLIGIYRLCLTSKTISFVKLNSEAAAVVLQLMNIIRRCGHSE
NFFFIEVGRSAVTGPGEFWMQVDDSVVAQNMHETILEAMRAMSDEFPRRSKSQSSSNC
SNPISVPLRRHHLNPPPSQVGLTRRSRTESITATSPASMVGGKPGSFRVRASSDGEG
TMSRPASVDGSPVSPSTNRTAHRRHRSARLHPPLNHSRSIPMPASRCSPSATSPVSL
SSSSTSGHGSTSDCLFPRRSSASVSGSPSDGGFISSDEYGSSPCDFRSSFRSVTPDSL
GHTPPARGEEELSNYICMGKG PSTLTAPNGHYILSRGGNGHRCTPGTGLGTSPALAG
DEAASAADLDNRFRKRTHSAGTSPTITHQKTPSQSSVASIEEYTEMMPAYPPGGGSGG
RLPGHRHSAFVPTRSYPEEGLEMHPLERRGGHHRPDSSTLHTDDGYMPMSPGVAPVPS
GRKGS GDYMPMSPKSVSAPQQIINPIRRHPQRVDPNGYMMMSPGGCS PDIGGGPSSS
SSSSNAVPSGTSYGLWTNGVGGHSHVLPHPKPPVESSGGKLLPCTGDYMNMSPVGD
SNTSSPSDCYYGPEDPQH KPVLSYYS LPRSFKHTQRPGEPEEGARHQHLRLSTSSGRL
LYAATADDSSSSTSSDSLGGGYCGARLEPSLPHPHQVLQPHLPRKVD TAAQTNSRLA
RPTRLSLGD PKASTLPRAREQQQQQQPLLHPPEPKSPGEYVNIEFGSDQSGYLSGPVA
FHSSPSVRCPSQLQPAPREEETGTEEYMKMDLGPGRRAAWQESTGVEMGRLGPAPPGA
ASICRPTRAVPSSRGDYMTMQMSCPRQSYVDTSPAAPVSYADMRTGIAAEVSLPRAT
MAAASSSSAASASPTGPQGAAELAAHSSLLGGPQGP GGMSAFTRVNLSPNRNQSAKVI
RADPQGCRRRHSSSETFSSTPSATRVGNTPVFGAGAAVGGGGSSSSSEDEVKRHSSASF
ENVWLRPGELGGAPKEPAKL CGAAGGLENLNYIDL DLVKDFKQCPQECTPEPQPPPP

```

STS PPPHQPLGSGESSSTRRSSEDL SAYASISFQKQPEDRQ"  
2390..2657  
/gene="IRS1"  
/standard\_name="GDB:456117"  
/db\_xref="UniSTS:157470"  
STS 3619..4116  
/gene="IRS1"  
/standard\_name="PMC86565P4"  
/db\_xref="UniSTS:273537"  
STS 3776..4038  
/gene="IRS1"  
/standard\_name="GDB:456125"  
/db\_xref="UniSTS:157472"  
STS 4985..5090  
/gene="IRS1"  
/standard\_name="D2S2647"  
/db\_xref="UniSTS:57707"  
STS 5079..5200  
/gene="IRS1"  
/standard\_name="SHGC-52849"  
/db\_xref="UniSTS:10265"  
STS 5329..5501  
/gene="IRS1"  
/standard\_name="RH17903"  
/db\_xref="UniSTS:46669"

## ORIGIN

```
1  cggcgggcgcg gtcggaggggg gccggcgcgcg agagccagac gccgcccgtt gttttggttg
61  gggctctcgg caactctccg aggaggaggga ggaggaggga ggaggggaga agtaactgca
121 gcggcagcgc cctcccagg aacaggcgtc ttccccgaac ccttcccaaa cctcccccat
181 cccctctcgc ccttgtcccc tcccctcctc cccagccgcc tggagcgagg ggcagggatg
241 agtctgtccc tccggccggt cccagctgc agtggtgcc cggtatcgtt tcgcatggaa
301 aagccacttt ctccaccgc cgagatgggc ccgatgggg ctgcagagga cgcgcccgcg
361 ggcggcgcca gcagcagcag cagcagcagc agcaacagca acagccgcag cgcgcggctc
421 tctgcgactg agctggtatt tgggcggctg gtggcggtg ggacggttg ggggtgggag
481 gaggcgaagg aggagggaga accccgtgca acgttgggac ttggcaacct gcctccccct
541 gcccaaggat atttaatttg cctcgggaat cgctgcttcc agaggggaac tcaggaggga
601 aggcgcgcgc gcgcgcgcgc tcctggaggg gcaccgcagg gacccccgac tgtcgcctcc
661 ctgtgccgga ctccagccgg ggcgacgaga gatgcattct cgctccttcc tgggtggcggc
721 ggcggctgag aggagacttg gctctcggag gatcggggct gccctcacc cggacgcact
781 gcctccccgc cggcgtgaag cgcccgaaaa ctccggtcgg gctctctcct gggctcagca
841 gctgcgtcct ccttcagctg cccctccccg gcgcgggggg cggcgtggat ttcagagtcg
901 gggtttctgc tgccctccagc cctgtttgca tgtgccgggc cgcggcgagg agcctccgcc
961 cccaccgcgg ttgttttctg gagcctccct ctgctcagcg ttggtggtgg cgggtggcagc
1021 atggcgagcc ctccggagag cgatggcttc tcggacgtgc gcaaggtggg ctacctgcgc
1081 aaaccaaga gcatgcacaa acgcttcttc gtactgcgcg cggccagcga ggctgggggc
1141 cggcgcgccc tcgagtacta cgagaacgag aagaagtggc ggcacaagtc gagcgcccc
1201 aaacgctcga tcccccttga gagctgcttc aacatcaaca agcgggctga ctccaagaac
1261 aagcacctgg tggctctcta caccgggac gagcactttg ccatcgcggc ggacagcgag
1321 gccgagcaag acagctggta ccaggctctc ctacagctgc acaaccgtgc taagggccac
1381 cagcagcgag ctgcggccct cggggcggga ggtggtgggg gcagctgcag cggcagctcc
1441 ggccttggtg aggtgggga ggacttgagc tacggtgacg tgcccccagg acccgcatc
1501 aaagaggtct ggcaagtgat cctgaagccc aagggcctgg gtcagacaaa gaacctgatt
1561 ggtatctacc gcctttgcct gaccagcaag accatcagct tcgtgaagct gaactcggag
1621 gcagcggccg tgggtgctgca gctgatgaac atcaggcgct gtggccactc ggaaaacttc
1681 ttcttcatcg aggtgggccc ttctgccgtg acggggcccc gggagttctg gatgcagggtg
1741 gatgactctg tgggtggcca gaacatgcac gagaccatcc tggaggccat gcgggcatg
1801 agtgatgagt tccgccctcg cagcaagagc cagtcctcgt ccaactgctc taaccccatc
1861 agcgtcccc cgcgcgggca ccactcctaac aatccccgcg ccagccaggt ggggctgacc
1921 cgccgatcac gcactgagag catcaccgcc acctccccgg ccagcatggt gggcggaag
1981 ccaggctcct tccgtgtccg cgcctccagt gacggcggaag gcaccatgct cgcgccagcc
```

```
2041 tcggtggacg gcagccctgt gagtcccagc accaacagaa cccacgccc cggcatcgg
2101 ggcagcgccc ggctgcaccc cccgctcaac cacagccgct ccatccccat gccggcttcc
2161 cgctgctcgc cttcggccac cagcccggtc agtctgtcgt ccagtagcac cagtggccat
2221 ggctccacct cggattgtct cttcccacgg cgatctagtg cttcgggtgc tggttcccc
2281 agcgatggcg gtttcatctc ctcggatgag tatggctcca gtccctgcga tttccggagt
2341 tccttccgca gtgtcactcc ggattccctg ggccacaccc caccagccc cggtgaggag
2401 gagctaagca actatatctg catgggtggc aaggggccct ccacctgac aacaggcttg
2461 ggtcactaca ttttgtctcg ggggtgcaat ggccaccgct gcacccagg ggataatcgg
2521 ggcacgagtc cagccttggc tggggatgaa gcagccagtg ctgcagatct ggataatcgg
2581 ttccgaaaga gaactcactc ggcaggcaca tcccctacca ttaccacca gaagacccc
2641 tcccagtcct cagtggcttc cattgaggag tacacagaga tgatgcctgc ctaccacca
2701 ggaggtggca gtggaggccg actgccggga cacaggcact ccgccttctg gccaccgcg
2761 tcctacccag aggagggctc ggaaatgcac cccttgagc gtcggggggg gcaccaccg
2821 ccagacagct ccacctcca cagggatgat ggctacatgc ccatgtcccc aggggtggcc
2881 ccagtgccc gtggccgaaa gggcagtgga gactatatgc ccatgagccc caagagcgt
2941 tctgccccac agcagatcat caatcccatc agacgccatc cccagagagt ggacccaat
3001 ggctacatga tgatgtcccc cagcgggtggc tgctctcctg acattggagg tggccccagc
3061 agcagcagca gcagcagcaa cgccgtccct tccgggacca gctatggaaa gctgtggaca
3121 aacggggtag ggggccacca ctctcatgtc ttgcctcacc ccaaaccccc agtggagagc
3181 agcgggtggt agctcttacc ttgcacaggt gactacatga acatgtcacc agtgggggac
3241 tccaacacca gcagcccctc cgactgctac tacggccctg aggaccccca gcacaagcca
3301 gtccctcctc actactcatt gccaaagatcc ttaagcaca cccagcgcgc cggggagccg
3361 gaggaggggt cccggcatca gcacctccgc ctttccacta gctctggtcg ccttctctat
3421 gctgcaacag cagatgattc ttctcttcc accagcagcg acagcctggg tgggggatac
3481 tgcgggggcta ggctggagcc cagccttcca catccccacc atcaggttct gcagcccat
3541 ctgcctcgaa aggtggacac agctgctcag accaatagcc gcctggccc gccacgag
3601 ctgtccctgg gggatcccaa ggcagcacc ttacctcggg cccgagagca cccagcag
3661 cagcagccct tgctgcaccc tccagagccc aagagcccgg gggaatatgt caatatgaa
3721 tttgggagtg atcagtctgg ctacttgtct ggccgggtgg ctttccacag ctcacctct
3781 gtcaggtgtc catcccagct ccagccagct cccagagagg aagagactgg cactgaggag
3841 tacatgaaga tggacctggg gccgggcccg agggcagcct ggcaggagag cactggggtc
3901 gagatgggca gactgggccc tgcacctccc ggggctgcta gcatttgag gcctaccgg
3961 gcagtgccc gcagccgggg tgactacatg accatgcaga tgagttgtcc ccgtcagagc
4021 tacgtggaca cctcgcacg tgcccctgta agctatgctg acatgcgaac aggcattgct
4081 gcagaggagg tgagcctgcc cagggccacc atggctgctg cctcctcatc ctcagcagc
4141 tctgcttccc cgactgggccc tcaaggggca gcagagctgg ctgcccactc gtccctgctg
4201 gggggccccc aaggacctgg gggcatgagc gccttcaccc ggggtgaacct cagtcctaac
4261 cgcaaccaga gtgccaaagt gatccgtgca gaccacaag ggtgccggcg gaggcatagc
4321 tccgagactt tctcctcaac acccagtgcc acccgggtgg gcaacacagt gccctttgga
4381 gcggggggcag cagtaggggg cggtggcggg agcagcagca gcagcgagga tgtgaaacgc
4441 cacagctctg cttcctttga gaatgtgtgg ctgaggcctg gggagcttg gggagcccc
4501 aaggagccag ccaaactgtg tggggctgct gggggtttg agaatggtct taactacata
4561 gacctggatt tggtaagga cttcaaacag tgccctcagg agtgcacccc tgaaccgcag
4621 cctccccac cccaccccc tcatcaaccc ctgggcagcg gtgagagcag ctcaccgcg
4681 cgctcaagtg aggatttaag cgcctatgcc agcatcagtt tccagaagca gccagaggac
4741 cgctcagtagc tcaactggac atcacagcag aatgaagacc taaatgacct cagcaaatcc
4801 tcttctaact catgggtacc cagactctaa atatttcatg attcacaact aggacctcat
4861 atcttctcctc tcagtagatg gtacgatgca tccatttcag tttgtttact ttatccaatc
4921 ctcaggattt cattgactga actgcacgtt ctatattgtg ccaagcgaaa aaaaaaatg
4981 cactgtgaca ccagaataat gagtctgcat aaacttcac ttcaacctta aggacttagc
5041 tggccacagt gagctgatgt gccaccacc gtgtcatgag agaatgggtt tactctcaat
5101 gcattttcaa gatacatttc atctgctgct gaaactgtgt acgacaaagc atcattgtaa
5161 attatttcat acaaaactgt tcacgttggg tggagagagt attaaatatt taacataggt
5221 tttgatttat atgtgtaatt ttttaaataa aaatgtaact tttcttacag cacatctttt
5281 ttttggatgt gggatggagg tatacaatgt tctgttgtaa agagtggagc aaatgcttaa
5341 aacaaggctt aaaagagtag aatagggtat gatccttgtt ttaagattgt aattcagaaa
5401 acataatata agaatacatg tgccatagat ggttctcaat tgtatagtta tatttgctga
5461 tactatctct tgatcataaa acctgatgtt gagctgagtt ccttataaga attaatctta
5521 attttgtatt ttttctgtga agacaatagg ccatgttaat taaactgaag aaggatatat
5581 ttggctgggt gttttcaaat gtcagcttaa aattggtaat tgaatggaag caaaattata
```



5641 agaagaggaa attaaagtct tccattgcat gtattgtaaa cagaaggaga tgggtgattc  
5701 cttcaattca aaagctctct ttggaatgaa caatgtgggc gtttgtaaatt tctggaaatg  
5761 tctttctatt cataataaac tagatactgt tgatctttta aaaaaaaaaa aaaaaaaaaa  
5821 aaaaaaaaa

//

[Disclaimer](#) | [Write to the Help Desk](#)  
[NCBI](#) | [NLM](#) | [NIH](#)

Sep 27 2006 15:22:06